Agricultural Transitions in the Amazon Basin

An LBA Synthesis Activity
Products

• Monograph – about 250 pages, target publisher is Island Press, publication in early 2008

• Article in a peer-reviewed journal – major messages from book
Overview of Book Structure

Agricultural Transitions in the Amazon Basin

• Chapter 1. Introduction (Jerry Melillo, Mercedes Bustamante, Diogenes Alves and Ruth DeFries)
  – typology of transitions with multiple pathways possible

• Chapter 2. Contemporary land-use change and the human dimension (Emilio Moran, Stephen Walsh)
  – Dynamic mosaic, “extensification” versus intensification
Biogeochemical Changes Along Agricultural Transitions
(Mercedes Bustamante and Chris Neill, coordinators)

Chapter 3. Agricultural transitions in the cerrado (Mercedes Bustamante, Richard Zepp – structure to be coordinated with Chapter 4)
  - Focusing on general patterns of biogeochemical changes along transition pathways (delta C,N, P stocks; gaseous and solution fluxes)

Chapter 4. Agricultural transitions in the forest (Chris Neill, Carlos Cerri, Eric Davidson, Flávio Luizão – structure to be coordinated with Chapter 3)
  - As in Chapter 3

Chapter 5. Comparisons of cerrado and forest transitions (Mercedes Bustamante, Chris Neill)
  - Identifying common patterns across systems
Forest Pasture

Tilling, fertilizing Forest clearing

N$_2$O Flux

Forest clearing

Tilling, fertilizing

TIME
Scaling Process-level Understanding to the Region – coupling remote sensing and simulation modeling (Diogenes Alves, Chris Potter – coordinators)

Chapter 6. Tracking transitions: remote sensing to document changes in land cover and land use (Diogenes Alves, Ruth DeFries)
- Focusing on pathways and rates of major land-use transitions associated with agriculture

Chapter 7. Regional extrapolations using simulation modeling (Chris Potter, Carlos Eduardo Cerri)
- Using biogeochemistry models (e.g., CASA, Century) to simulate biogeochemical changes along transition pathways (delta C,N, P stocks; gaseous and solution fluxes)

Chapter 8. Agriculture and the climate system – local to regional consequences (Pedro Dias, Ronnie Avissar?)
- Focusing on interactions between land-surface properties and climate system
The Future of Agriculture in the Basin

Chapter 9. Looking to a sustainable future – (?Tatiana Sa, others?)
- Exploration of alternative futures for agriculture in the Amazon Basin, identification of policies to guide the region towards a sustainable future
Key dates:

• March 1, 2007 – 1st drafts due and shared among authors

• April 21-26 – 2007 Workshop in Florianopolis to fine-tune book and write an overall synthesis article for Ambio or like journal